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EXAMINER	
AMARI, ALESSANDRO V	

ART UNIT	PAPER NUMBER
2872	

DATE MAILED: 05/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/602,327	MOSSBERG, THOMAS W.	
	Examiner	Art Unit	
	Alessandro V. Amari	2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-58* is/are pending in the application.

4a) Of the above claim(s) *9,13-20,33-43 and 52-58* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,10-12,21-32 and 44-51* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 June 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *6/23/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Claims 9, 13-20, 33-43 and 52-58 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper, dated 22 March 2004. The Examiner finds the Applicant's characterization of the generic claims (claims 1-7 and 10-12) and species 2 (claims 8, 21-32 and 44-51) as acceptable and therefore, those claims will be examined in this office action. The requirement is deemed proper and is therefore made FINAL.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Method of forming a holographic spectral filter

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitations of claims 27-32 and 50-51 reciting deposition of a layer and spatially selection deformation or imprinting of the layer must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-8, 10-12, 21-27, 31, 32 and 44-46 and 48-51 are rejected under 35 U.S.C. 102(b) as being anticipated by Maeda et al US Patent 4,824,193.

In regard to claims 1, 21 and 44, Maeda et al discloses (see for example, Figures 1, 3A, 4, 7, 8, 11, 12, 15, 16) a method comprising imparting or imprinting on at least one slab face of a planar waveguide as described in column 20, lines 23-24, a pattern for forming a volume hologram in a planar waveguide, the volume hologram comprising at least one of temporal, spectral and spatial transformation information, the volume hologram comprising a plurality of diffractive elements exhibiting a positional variation in at least one of amplitude, optical separation, and spatial phase over some portion of the volume of the hologram, the information for transforming a chosen input signal into a chosen output signal as the input and output signals propagate within the optical medium or waveguide as described in column 2, lines 5-54, column 4, lines 1-17, 56-57, column 5, lines 29-52, column 8, lines 57-68, column 9, lines 1-12, column 10, lines 48-68, and column 11, lines 1-9.

Regarding claims 2 and 24, Maeda et al discloses that the volume hologram is imparted by at least one technique claimed as described in column 2, lines 1-20 and column 4, lines 50.

Regarding claim 3, Maeda et al discloses that the propagation of the input and output signals within the optical medium substantially unguided in three dimensions as described in column 5, lines 29-52 and as shown in Figures 3A and 8.

Regarding claims 4, 5 and 6, Maeda et al teaches that the volume hologram comprising temporal, spectral and spatial transformation as shown in Figures 3A, 8, 12, 16 and as described in column 5, lines 29-52, column 8, lines 57-68, column 9, lines 1-12, column 10, lines 4-10, 48-68, and column 11, lines 1-9.

Regarding claim 7, Maeda et al discloses that the optical medium comprises a planar optical waveguide, propagation of the input and output optical signals within the planar waveguide substantially guided in at least one dimension by the planar waveguide as described in column 20, lines 23-24.

Regarding claim 8, Maeda et al teaches imparting a pattern onto at least a portion of at least one surface of the planar optical waveguide, thereby forming the volume hologram therein as described in column 4, lines 18-50, column 11, lines 40-56.

Regarding claims 10, 11 and 12, Maeda et al discloses that the volume hologram comprising temporal, spectral and spatial transformation as shown in Figures 3A, 8, 12, 16 and as described in column 5, lines 29-52, column 8, lines 57-68, column 9, lines 1-12, column 10, lines 4-10, 48-68, and column 11, lines 1-9.

Regarding claims 22 and 45, Maeda et al discloses that the volume hologram comprises temporal and spatial transformation information as shown in Figures 3A, 8, 12, 16 and as described in column 5, lines 29-52, column 8, lines 57-68, column 9, lines 1-12, column 10, lines 4-10, 48-68, and column 11, lines 1-9.

Regarding claims 23 and 46, Maeda et al discloses that the volume hologram comprises spectral and spatial transformation information as shown in Figures 3A, 8, 12, 16 and as described in column 5, lines 29-52, column 8, lines 57-68, column 9, lines 1-12, column 10, lines 4-10, 48-68, and column 11, lines 1-9.

Regarding claims 25 and 48, Maeda et al teaches that the pattern is imparted on two faces of the substrate as described in column 2, lines 35-39.

Regarding claims 26 and 49, Maeda et al discloses a product according to the method as described in column 2, lines 5-54.

Regarding claims 27 and 50, Maeda et al discloses further depositing a layer onto at least one slab face of the planar waveguide and imparting the pattern onto and/or into the layer after deposition thereof on the planar waveguide thereby imparting the pattern onto the planar waveguide and forming the volume hologram in the planar waveguide as described in column 11, lines 40-56 and column 13, lines 25-45.

Regarding claim 31, Maeda et al discloses that the deposited layer comprises photosensitive material, and the pattern is imparted by spatially selective photoexpsoure of the deposited layer as described in column 11, lines 40-56 and column 13, lines 25-45.

Regarding claims 32 and 51, Maeda et al discloses the product according to the method as described in column 2, lines 5-54.

6. Claims 1-3, 6-8, 12, 21, 24, 26-32, 44 and 49-51 are rejected under 35 U.S.C. 102(b) as being anticipated by Brady et al "Holographic interconnections in photorefractive waveguides".

In regard to claims 1, 21 and 44, Brady et al discloses (see for example, Figures 1, 2, 7-10) a method comprising imparting or imprinting on at least one slab face of a planar waveguide, a pattern for forming a volume hologram in a planar waveguide as shown in Figs. 7 and 10, the volume hologram comprising at least one of temporal, spectral and spatial transformation information, the volume hologram comprising a plurality of diffractive elements exhibiting a positional variation in at least one of amplitude, optical separation, and spatial phase over some portion of the volume of the hologram, the information for transforming a chosen input signal into a chosen output signal as the input and output signals propagate within the optical medium or waveguide as described in page 2324, left and right hand columns, page 2325, right and left hand columns, page 2327, left hand column, lines 24-61, page 2329, left hand column, lines 28-40 and right hand columns 1-31, page 2331, left hand column, lines 9-30, right hand column, lines 1-7 and page 2332, left hand column, lines 1-13.

Regarding claims 2 and 24, Brady et al discloses that the volume hologram is imparted by at least one technique claimed as described page 2327, left hand column, lines 24-61.

Regarding claim 3, Brady et al discloses that the propagation of the input and output signals within the optical medium substantially unguided in three dimensions as described as described in page 2324, left and right hand columns.

Regarding claim 6, Brady et al teaches that the volume hologram comprising spatial transformation as shown in Figures 1, 2 and 7-10.

Regarding claim 7, Brady et al discloses that the optical medium comprises a planar optical waveguide, propagation of the input and output optical signals within the planar waveguide substantially guided in at least one dimension by the planar waveguide as shown in Figure 1 and 7-10 and as described as described in page 2324, left and right hand columns.

Regarding claim 8, Brady et al teaches imparting a pattern onto at least a portion of at least one surface of the planar optical waveguide, thereby forming the volume hologram therein as described in as described on page 2327, left hand column, lines 24-61.

Regarding claim 12, Brady et al discloses that the volume hologram comprising spatial transformation as shown in as shown in Figures 1, 2 and 7-10.

Regarding claims 26, 32, 49 and 51, Brady et al discloses the product according to the method as described in page 2324, left and right hand columns.

Regarding claims 27 and 50, Brady et al discloses further depositing a layer onto at least one slab face of the planar waveguide and imparting the pattern onto and/or into the layer after deposition thereof on the planar waveguide thereby imparting the pattern onto the planar waveguide and forming the volume hologram in the planar waveguide as shown in Figures 7-10 and as described in page 2327, left hand column, lines 24-61.

Regarding claim 31, Brady et al discloses that the deposited layer comprises photosensitive material, and the pattern is imparted by spatially selective photoexpsoure of the deposited layer as described in as described on page 2327, left hand column, lines 24-61 and as shown in Figures 7-10.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 28-30 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda et al US Patent 4,824,193 in view of Veldcamp et al US Patent 4,846,552.

Regarding claims 28-30 and 47, Maeda et al teaches the invention as set forth above but does not teach in regard to claim 28, that the pattern is imparted by spatially selective deformation of the deposited layer or in regard to claim 29 that the deposited layer comprises dielectric material or in regard to claim 30 that the deposited layer comprises metallic material or in regard to claim 47, that the pattern is imprinted by stamping, embossing, nanoimprinting or laser writing or combinations thereof.

Regarding claim 28, Veldcamp et al teaches (see for example Figure 5) that the pattern is imparted by spatially selective deformation of the deposited layer as described in column 3, lines 4-28, column 10, lines 16-68 and column 11, lines 1-47.

Regarding claim 29, Veldcamp et al teaches that the deposited layer comprises dielectric material as described in column 4, lines 25-40.

Regarding claim 30, Veldcamp et al teaches that the deposited layer comprises metallic material as described in column 4, lines 25-40.

Regarding claim 47, Veldcamp et al teaches that the pattern is imprinted by stamping, embossing, nanoimprinting or laser writing or combinations thereof as described in column 7, lines 9-17 and column 11, lines 39-47.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the methods as taught by Veldcamp et al for the formation of the device of Maeda et al in order to produce highly efficient and higher quality optical elements as described in column 3, lines 46-53 of Veldcamp et al.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alessandro V. Amari whose telephone number is (571) 272-2306. The examiner can normally be reached on Monday-Friday 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on (571) 272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ava dzy
14 May 2004

MARK A. ROBINSON
PRIMARY EXAMINER